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Housing for an Electronic Monitoring Device on a  
Vehicle Part

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Field of the Invention

10 The invention relates to a housing for an electronic  
monitoring device on a vehicle part such as a lead  
accumulator comprising a metallic, load-bearing  
baseplate and an injection molded, generally  
parallelepipedal housing body encapsulating the base-  
plate.

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Background of the Invention

20 Conventional housings for electronic monitoring  
devices on vehicle parts are normally made of metal or  
plastic. Metal housings have a baseplate with which  
they can be attached to the vehicle part. Housings made  
of plastic can be provided with shaped-on tabs or  
flanges for purposes of attachment.

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Brief Summary of the Invention

30 The invention provides a housing for an electronic  
monitoring device on a vehicle part such as a lead  
accumulator that can be made inexpensively by means of  
mass production and that meets all mechanical and  
electrical requirements. The housing according to the  
invention has a metallic load-bearing baseplate and an  
35 injection molded generally parallelepipedal housing  
body encapsulating the baseplate. The baseplate

projects out of the housing body on at least one side with a cantilevered attachment section. The housing is especially suited to receive an electrical charge status indicator for lead-acid batteries. Due to the cantilevered attachment section, a direct attachment to a suitably configured cell terminal is possible. Cell terminals are known onto which relatively thick electric cables are connected to upright stud bolts. When the attachment section is provided with appropriate attachment openings, it can be attached directly to the stud bolts of the cell terminal. Then the attachment section simultaneously serves to establish the electric connection, especially with the positive battery terminal.

In the preferred embodiment, the baseplate is stamped from sheet metal, together with one or more contact plates. Here, the baseplate and the contact plates are held together by an outer holding frame that is removed from the outside of the shaped housing body after the baseplate has been encapsulated.

Preferably, the baseplate and the contact plate are also connected with stamped-out soldering pins that are perpendicularly bent upwards and that are intended to penetrate into corresponding openings of a printed circuit board on which the electronic system of the device is mounted. Each contact plate preferably has a contact tag that projects out of the housing body after encapsulation and that is surrounded by a protective sleeve integrally molded with the housing body.

#### Brief Description of the Drawings

Additional features and advantages of the invention

ensue from the following description of a preferred embodiment and from the appended drawings to which reference is made. The drawings show the following:

5        Figure 1 - a perspective view of a baseplate and two contact plates that are stamped from one piece of sheet metal together and are connected by an outer holding frame;

10       Figure 2 - an exploded view of an electronic monitoring device with the housing according to the invention.

15                    Detailed Description of the Invention

20       The structures shown in Figure 1 are stamped from a piece of sheet metal. These structures include a baseplate 10 and two contact plates 12, 14 that are connected to the baseplate 10 on laterally projecting tabs by means of holding strips 16. These holding strips 16 form an outer holding frame by means of which the baseplate 10 is held in one plane with the contact plates 12, 14 so that it can be laid into an injection-molding tool.

25       The baseplate 10 has two circular stamped-out attachment openings 18, 20 and an embossed reinforcement bead 22. Furthermore, together with the baseplate 10, a contact tag 24 is stamped out whose free end is configured as a soldering pin 26 that stands upright perpendicular to the baseplate 10. The contact tag 24 consists of two U-shaped sections that face in opposite directions and that hold the soldering pin 26 in the desired raised position. The U-shaped section facing away from the baseplate 10 forms a

contact surface that is designed to make heat-conducting contact with a temperature sensor element mounted on a printed circuit board located above it. Therefore, via the contact tag 24, heat conduction from the positive pole of a lead accumulator to the temperature sensor element via the baseplate 10 is ensured.

On each contact plate 12, 14, an inner end is bent perpendicularly and it holds a perpendicularly upright soldering pin 28, 30. The soldering pins 26, 28, 30 are arranged at the same height and are intended to penetrate into corresponding openings of a printed circuit board on which the electronic monitoring device is mounted, which is preferably a charge status indicator for a lead accumulator. Each contact plate 12, 14 also has a contact tag 32, 34 projecting towards the outside.

Figure 2 shows a parallelepipedal housing body 36 made of plastic that was produced by encapsulating the baseplate 10 and the contact plates 12, 14 with a suitable plastic injection-molding compound. The holding strips 16 (Figure 1) of the outer holding frame have been removed so that the electrical connection between the baseplate 10 and the contact plates 12, 14 is absent. The part 10a of the baseplate 10 that forms a cantilevered attachment section projects outwards on one of the narrow sides of the housing body 36. The contact tags 32, 34 of the contact plates 12, 14 project outwards on the opposite narrow side. Each contact plate is surrounded by a protective sleeve 38, 40 integrally molded with housing body 36. The contact tags 32, 34 as such are suitable to directly slide matching plug shoes onto them. The attachment part 10a of the baseplate 10, which projects out of the housing

body 36, is where the cantilevered attachment of the entire device to a positive cell terminal of a lead accumulator takes place, whereby the latter is provided with two stud bolts that then project through the attachment openings 18, 20 of the baseplate 10.

The reference numeral 42 in Figure 2 designates a printed circuit board on which the electronic device is mounted. The printed circuit board 42 has passages for the soldering pins 26, 28 and 30. The housing body 36 comprises integrally molded support structures 44 for the printed circuit board 42.

The side of the parallelepipedal housing body 36 has an open side opposite the baseplate 10 and a removable cover 46 fits on the open side of the housing body 36. The cover 46 has lock-in openings 48 that interact with the molded-on support projections 50 on the housing body 36 in order to keep the positioned cover 46 connected to the housing body 36.